

whilst Say's species will have to take the later name *Helix patula* of Deshayes, and following the nomenclature of the Pilsbry-Johnson "Catalogue" (NAUTILUS, XI, p. 141) be known as *Pyramidula (Gonyodiscus) patula* (Desh.), or yet better as *Gonyodiscus patula* (Desh.).

AGNATHOMORPHOUS AULACOPODA

BY H. BURRINGTON BAKER

In a recent paper (1924, Occ. Papers Mus. Zoo. Univ. Mich., no. 156), a provisional arrangement of the "Streptaxidae" was presented. This was mainly based on radulae, although certain other features of the anatomy of *Scolodonta (Systrophiella) eudiscus* and of *Rectartemon jessei* (one incomplete specimen) were included.

Since then, I have dissected *Streptaxis (Odontartemon) glaber normalis* Jousseau and reexamined the other two species. These new data, which will be figured in a future paper, force a quite different conception of the relationships than that indicated in the article cited above.

The animal of *Streptaxis glaber normalis* is very similar to that of *Rectartemon jessei*. Foot: strictly holopod; i. e., without pedal grooves. Pallial complex: described and figured in this or a related species by Dr. Pilsbry (1907, Man. Con. XIX, fig. lii-5); lung venation much weaker than in *R. jessei*. Penis: shorter and stouter, but fundamentally similar in structure; lower half surrounded by a heavy, muscular sheath, which attaches along the vas deferens; penial retractor inserted at apex and attached to diaphragm on the right of spermoviduct ("uterus"). Vas deferens: arises from base of spermoviduct, runs straight across to penial sheath, encircles the penis, and finally passes up along the side of that organ to enter at its apex; arrangement similar in *R. jessei* (*op. cit.*, fig. x-55), and portion above penial sheath shown in my figure (although I did not recognize it at the time). Free ocular retractors: short;

right one fused posteriad with the left to form a common band, which is about half as long as either free muscle and joins the tail retractors near the level of the mantle edge. In *R. jessei*, both eye retractors join a broad band of muscles that retract the snout; in both species, the right ocular is completely free from the genitalia. Jaw: absent, only represented as a low, rounded fold above the buccal aperture.

Further study of the animal of *Scolodonta eudiscus* brings out the following additional features. Columellar muscle: receives the long penis retractor near the base of the liver, the pharyngeal muscle at about the middle of the body cavity, then the two right oculars and finally the two left ones, which unite with the tail retractors near the foot; right ocular bands pass between penis and vagina. Jaw: represented by a definite, sharp-edged, crescentic fold, which looks like a true jaw but is quite plastic; examination under high magnification shows that this structure is covered with a thickened epidermis composed of polygonic cells. Thus, although a coherent jaw is absent, a vestigial, homologous development is certainly recognizable. Foot: margined on either side by a distinct pedal groove, both of which terminate at a definite, caudal mucous pore below a small, dorsal projection; above each pedal groove, a rounded ridge is marked off, except near the caudal end, by another, less regular furrow; each longitudinal ridge terminates anteriorly as a small, suprapedal lobe under the snout. The foot of *Happia* (*Happiella*) *guildingi* (Bland) is fundamentally similar, but the projection above the mucous pore is very much longer, as figured by Bland himself (1865, A. Lyc. Nat. Hist., N. Y., VIII, 157-9, figs. 3).

From the above descriptions, it will be seen that *Scolodonta* (subgenus *Systrophiella*) and *Happia* (section *Happiella*) cannot be included in the Streptaxidae as they are apparently much more closely related to the Aulacopod families than to the Holopod ones. In fact, they appear to have certain characters in common with the superfamily Agnatha, but *Scolodonta*, at least, differs in the close approximation of the cerebral ganglia, which are practically fused as in the Agnathomorpha. For these reasons, a separate family is necessary for at least *Scolo-*

donta and *Happia*; from the radulae and shells, I believe that this should also include *Austroselenites*, *Zophos* (?), *Drepanostomella*, *Martinella* (?) *Miradiscops*, *Tamayoa* and *Guestieria*.

The American families of *Sigmurethra* with purely carnivorous dentition, all of which have short cerebral commissures, may be separated by the following provisional key:

- A' Foot aulacopod, bounded by pedal grooves and with a caudal mucous pore; penial retractor a branch of columellar muscle Scolodontidae
- A'' Foot holopod; penial retractor usually attached to diaphragm
 - B' Kidney oblong, parallel to pericardium; jaw well developed; radula with Zonitid laterals
Haplotrematidae
 - B'' Kidney not parallel to pericardium; jaw obsolete; radula with strictly aculeate laterals
 - C' Kidney oval, transverse; right ocular retractor typically not associated with genitalia; shell helicoid to discoid Streptaxidae
 - C'' Kidney triangular, oblique; right ocular retractor passes between penis and vagina; shell usually elongate, often with truncate columella
Oleacinidae

The Scolodontidae may be further defined by the following sets of characters. Shell: thin, transparent to translucent, helicoid to discoid, with simple or emarginate peristome. Kidney: very long; parallel to pericardium as in the Haplotrematidae. Jaw: vestigial (to functional?). Laterals of radula: anterior ends narrow and elongate; cusps aculeate or fimbriate.

The Streptaxidae certainly include *Streptaxis* and *Rectartemon* (*Artemon* of authors); the other American groups are probably *Polygyratia*, *Systrophina*, *Entodina* and *Ridleya* (?). Shell: heavier and more opaque, usually with reflected peristome, often with teeth or lamellae. Jaw: truly absent. Laterals of radula: anterior ends expanded to form large areas for attachment; cusps strictly aculeate. Although the venation of the lung is

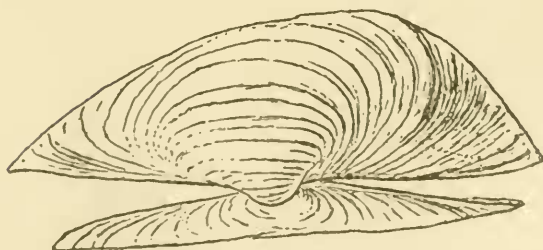
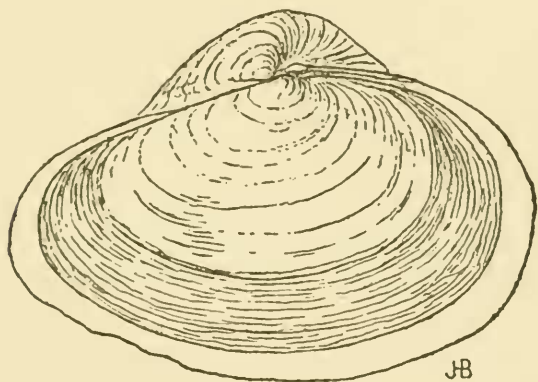
very weak in the smaller species, it resembles that of the Oleacinidae in at least one of the larger forms (*Recturtemon tessei*).

AN ABNORMAL CLAM

BY J. HENRY BLAKE

During my visit to Provincetown, Cape Cod, in August, there was given to me a curiously deformed clam, *Mya arenaria* Linn.

This specimen was dug with other normal clams from the



“flats” at the western end of the harbor by Mr. Newcomb, a native of the town. It was alive when taken and apparently as “happy” as its neighbors.

Its striking abnormality attracted my attention and I have